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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/566,066	06/29/2006	Fritz Gestermann	PO-8729/LeA 36,752	2036
157 7590 03/31/2008 BAYER MATERIAL SCIENCE LLC 100 BAYER ROAD PITTSBURGH, PA 15205			EXAMINER BELL, BRUCE F	
			ART UNIT 1795	PAPER NUMBER
			MAIL DATE 03/31/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/566,066	Applicant(s) GESTERMANN ET AL.	
	Examiner Bruce F. Bell	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-35 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 11-35 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/26/06</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Specification

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (c) BRIEF SUMMARY OF THE INVENTION.
- (d) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (e) DETAILED DESCRIPTION OF THE INVENTION.
- (f) CLAIM OR CLAIMS (commencing on a separate sheet).
- (g) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).

Applicant is requested to place each of the above section headings prior to each section of their instant specification.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 11, 14, 17, 20, 23, 26, 28, 30, 32, 34 and 35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 11 is vague and indefinite with respect to the term "smooth". It is unclear from the term "how smooth the surface would have to be in order to meet the

characteristics of the surface of the gas diffusion electrode and the PFSA membranes, respectively. Claims 14, 17, 20, 23, 26, 28, 30, 32, 34 and 35 depend on claim 11 and therefore have the same deficiencies.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 11-13 and 30 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by DeNora (EP 0785294 A).

DeNora et al disclose an electrochemical cell for the electrolysis of an aqueous solution of hydrogen chloride (col. 4, lines 34-36), at least consisting of one anode half-cell having an anode (col. 4, lines 37-40), a cathode half-cell having a gas diffusion electrode as cathode (col. 4, lines 55-57) and an ion exchange membrane (col. 4, lines 47-50) which is arranged between anode half-cell and cathode half-cell, which ion exchange membrane consists at least of one perfluorosulphonic acid polymer (col. 4, lines 50-53), the gas diffusion electrode and the ion exchange membrane lying adjacently (col. 5, lines 25-28). The DeNora patent further sets forth pressure and temperature conditions in the electrochemical cell by which the ion exchange membrane and the gas diffusion electrode are intimately linked (i.e. having a contact area greater than 50% of the geometric area). The conditions are as follows:

Pressure: 0.1 bar (i.e. 102-1020 g/cm²), col. 5, lines 35-37.

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Temperature: not above 60⁰ C (col. 8, line 9 and example).

Therefore, the prior art of DeNora anticipates the applicants instant invention as shown by way of the disclosure above.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 11-13, 30 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Kolouch et al (6042702).

Kolouch et al discloses an electrochemical cell which has a perfluorinated cationic membrane that is made of hydrated copolymers of PTFE and PSFF vinyl either containing a pendant of sulfonic acid groups (NAFION) that has an equivalent wt. of 1100 gms., and 1500 gms., wherein the Nafion is a two layer structure. See col. 5, line 61 - col. 6, line 11. The anode and cathode are made of porous, gas diffusion electrodes having a high specific surface area. The anode and cathode comprise an electrochemically active material disposed adjacent, to the surface of the cation transporting membrane. A thin film of electrochemically active material may be applied directly to the membrane or in the membrane. The electrochemically active material may comprise a catalytic or metallic material or metallic oxide as long as the material can support charge transfer. The electrochemically active material may be a catalyst material of a noble metal or a transition metal and oxides, alloys or mixtures thereof. The catalyst material may be on a support of carbon and particles of PTFE. The

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electrode are hot pressed into the membrane in order to have a good contact between the catalyst material and the membrane. See col. 6, line 61 o col. 7, line 34.

The prior art of Kolouch et al anticipates the applicant instant invention as shown by way of the disclosure to Kolouch et al above.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 14-29 and 32-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kolouch et al (6042702) in combination with (Murphy et al (6059943) and applicants admitted prior art.

Kolouch et al is as disclosed above in the 35 USC 102(b) rejection above.

Kolouch et al fails to disclose that the PFSA has a support embedded therein or thereon or between two layers of the PFSA.

Murphy et al discloses a composite membrane having cation exchange properties. See abstract. The membrane has proton conductivity throughout the membrane.

Applicants have admitted on page 1 of their instant specification that ion exchange membranes are commercially available wherein a flat support structure of a woven fabric, gauze, braiding or the like made from PTFE are applied to one face of a

PFSA membrane (Nafion) and that these membranes are known to be used in electrolysis cells having gas diffusion electrodes.

The subject matter as a whole would have been within the ability of the person having ordinary skill in the art at the time the instant invention was made because even though the prior art of Kolouch et al does not disclose the use of a support in the ion exchange membrane of PFSA, the prior arts of Murphy et al and applicants own admitted prior art show that these types of membranes exist for use in electrochemical cells utilizing gas diffusion electrodes and that the support materials are used to enable a more mechanically sound device that will withstand the rigors of higher pressures, electrolytic fluid resistance and added mechanical stability to keep the cell from breaking down easily. Further Murphy et al shows that when these types of supports are used, it still enables the ionic flow of materials through the supported membrane. Koulouch et al also sets forth the use of different equivalent weights of PFSA to be used as a composite membrane. Therefore, the prior art of Kolouch et al in combination with Murphy et al and Applicants admitted prior art, render the applicants instant invention as obvious for the reasons set forth above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bruce F. Bell whose telephone number is 571-272-1296. The examiner can normally be reached on Monday-Friday 6:30 AM - 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BFB
March 27, 2008

/Bruce F. Bell/
Primary Examiner, Art Unit 1795